CLAIMS

We claim:

1. A disambiguation method in a spoken dialog service that identifies a user need, the disambiguation method being associated with a rooted tree, the method comprising:

(a) based on a received user utterance in response to a prompt, establishing at least one lit node and assigning a current focus node;

(b) if there is a single direct descendent of the focus node that is lit:

(1) assigning the lit direct descendent of the current focus node as a new focus node;

(2) if the new focus node is a leaf node, identifying the user need; and

(3) if the new focus node is not a leaf node, prompting the user to disambiguate between descendent nodes of the new focus node and returning to step (a);

(c) if there is not a single direct descendent of the current focus node that is lit:

(1) assigning a lowest common ancestor node of all lit nodes as a new focus node;

(2) prompting the user for input to disambiguate between descendent nodes of the new focus node; and

(3) returning to step (a).

2. The method of claim 1, wherein if after step (a), only one lit node exists that is not a direct descendent of the focus node, and the one lit node is a leaf node, the method further comprises:

(d) identifying the user need according to the lit leaf node.

3. The method of claim 2, wherein if only one lit node exists that is not a direct descendent of the focus node and the one lit node is a leaf node, the method further comprises presenting information to the user regarding a condition of the lit leaf node.

4. The method of claim 1, wherein a first prompt to the user is associated with a root node of a rooted tree.

5. A dialog manager within a spoken dialog service, the dialog manager operating according to a dialog disambiguation rooted tree, the rooted tree having a root node, nodes descending from the root nodes organized in categories and leaf nodes, the dialog manager performing the steps:

(a) gathering input from a user to match with at least one node and node condition, wherein a first prompt from the dialog manager relates to a focus root node;

(b) lighting at least one relevant node according to the received user input;

(c) generalizing by attempting to select a new focus node further from a current focus node by:

(1) assigning a node as a new focus node if it is the only lit direct descendent of a focus node after step (b); and

(2) assigning a lowest common ancestor node as a new focus node if there are multiple descendent nodes that are lit and step (c)(1) does not apply.

6. The dialog manager of claim 5, wherein step (c)(1) further comprises:

if the new focus node is a leaf node, identifying the user need; and

if the new focus nodes is not a leaf node, prompting the user to disambiguate between descendent nodes of the new focus node and returning to step (b).

7. The dialog manager of claim 6, wherein step (c)(2) further comprises:

prompting the user for input to disambiguate between descendent nodes of the new focus node; and

returning to step (b).

8. The dialog manager of claim 5, wherein if after step (b), only one lit node exists that is not a direct descendent of the focus node, and the one lit node is a leaf node, the method further comprises:

identifying the user need according to the lit leaf node.

9. The dialog manager of claim 8, wherein if only one lit node exists that is not a direct descendent of the focus node and the one lit node is a leaf node, the method further comprises presenting information to the user regarding a condition of the lit leaf node.

10. A method within a spoken dialog service for controlling a dialog flow using a dialog disambiguation rooted tree, the rooted tree having a root node, nodes descending from the root nodes organized in categories and leaf nodes, the method comprising:

(a) gathering input from a user to match with at least one node and node condition, wherein a first prompt from the dialog manager relates to a focus root node;

(b) lighting at least one relevant node according to the received user input;

(c) generalizing by attempting to select a new focus node further from a current focus node by:

(1) assigning a node as a new focus node if it is the only lit direct descendent of a focus node after step (b); and

(2) assigning a lowest common ancestor node as a new focus node if there are multiple descendent nodes that are lit and step (c)(1) does not apply.

11. The method of claim 10, wherein step (c)(1) further comprises:

if the new focus node is a leaf node, identifying the user need; and

if the new focus node is not a leaf node, prompting the user to disambiguate between descendent nodes of the new focus node and returning to step (b).

12. The method of claim 10, wherein if after step (b), only one lit node exists that is not a direct descendent of the focus node, and the one lit node is a leaf node, the method further comprises:

identifying the user need according to the lit leaf node.

13. The method of claim 12, wherein if only one lit node exists that is not a direct descendent of the focus node and the one lit node is a leaf node, the method further comprises presenting information to the user regarding a condition of the lit leaf node.

14. A spoken dialog service utilizing a disambiguation method associated with a rooted tree, the disambiguation method:

(a) based on a received user utterance in response to a prompt, establishing at least one lit node and assigning a current focus node;

(b) if there is a single direct descendent of the focus node that is lit:

(1) assigning the lit direct descendent of the current focus node as a new focus node;

(2) if the new focus node is a leaf node, identifying the user need; and

(3) if the new focus node is not a leaf node, prompting the user to disambiguate between descendent nodes of the new focus node and returning to step (a);

(c) if there is not a single direct descendent of the current focus node that is lit:

(1) assigning a lowest common ancestor node of all lit nodes as a new focus node;

(2) prompting the user for input to disambiguate between descendent nodes of the new focus node; and

(3) returning to step (a).

15. The spoken dialog service of claim 14, wherein if after step (a), only one lit node exists that is not a direct descendent of the focus node, and the one lit node is a leaf node, the method further comprises:

(d) identifying the user need according to the lit leaf node.

16. The spoken dialog service of claim 15, wherein if only one lit node exists that is not a direct descendent of the focus node and the one lit node is a leaf node, the method further comprises presenting information to the user regarding a condition of the lit leaf node.

17. The spoken dialog service of claim 15, wherein a first prompt to the user is associated with a root node of a rooted tree.

18. A computer-readable medium storing computer readable instructions for instructing a computing device to perform a disambiguation method in a spoken dialog service that identifies user need, the disambiguation method being associated with a rooted tree, the method comprising:

(a) based on a received user utterance in response to a prompt, establishing at least one lit node and assigning a current focus node;

(b) if there is a single direct descendent of the focus node that is lit:

(1) assigning the lit direct descendent of the current focus node as a new focus node;

(2) if the new focus node is a leaf node, identifying the user need; and

(3) if the new focus node is not a leaf node, prompting the user to disambiguate between descendent nodes of the new focus node and returning to step (a);

(c) if there is not a single direct descendent of the current focus node that is lit:

(1) assigning a lowest common ancestor node of all lit nodes as a new focus node;

(2) prompting the user for input to disambiguate between descendent nodes of the new focus node; and

(3) returning to step (a).

19. The computer-readable medium of claim 18, wherein if after step (a), only one lit node exists that is not a direct descendent of the focus node, and the one lit node is a leaf node, the method further comprises:

(d) identifying the user need according to the lit leaf node.

20. The computer-readable medium of claim 19, wherein if only one lit node exists that is not a direct descendent of the focus node and the one lit node is a leaf node, the method further comprises presenting information to the user regarding a condition of the lit leaf node.

21. The computer-readable medium of claim 18, wherein a first prompt to the user is associated with a root node of the rooted tree.